## **Abstract**

A novel polymer electrolyte is provided that enables a solid polymer electrolyte used in fuel cells, for example, to have sufficient proton conductivity even in a low-water-content state or a zero-water-content state by using a monomer compound represented by the general formula (1), and a graft copolymer compound in which the monomer compound represented by the general formula (1) is graft-copolymerized to the main chain of a fluorine-containing hydrocarbon polymer.

$$F \longrightarrow F$$

$$Tf \longrightarrow Tf$$

$$H$$

$$Tf$$

$$\begin{array}{c|c}
CH & CF_2 \\
CH_2 & F & F \\
HC & CH(Tf)_2
\end{array}$$

$$\begin{array}{c|c}
CH & CF_2 \\
F & F \\
\hline
 & M
\end{array}$$
(2)

Tf indicates a trifluoromethane sulfonyl group ( $-SO_2CF_3$ ).